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ABSTRACT

Research on second language learning suggests that age or age-related factors are a major variable in the acquisition of a second language for school. In the early stages of acquisition, older students are faster and more efficient learners, with the advantage of more advanced cognitive development in the first language. This early advantage diminishes after the first year of second language learning for adults, but remains for older children and adolescents. Adolescents past puberty are likely to retain an accent but are capable of developing complete second language proficiency. When schooled only in the second language, students in the 8-to-12-year range on arrival may be the most advantaged learners of school skills in the second language. Older students have less time to make up lost years of academic instruction easily. The effect of age diminishes over time as the learner becomes more proficient in the second language. Differences are generally found through the first five years after arrival. It takes language minority students in any type of program a minimum of four years to reach native speakers' level of school language proficiency and may take eight or more years, depending on a variety of factors. (MSE)

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Preamble

In this issue of *New Focus*, which examines the relationship of age to second language acquisition for school, two articles are presented. Virginia P. Collier reviews a number of studies, including her own recently completed one, that point to an advantage which children in middle childhood appear to have over younger children and adolescents in formally acquiring a second language. In the second article, Charles William Twyford analyzes a number of factors -- cognitive, sociocultural, affective, and linguistic -- that may account for age differences in second language acquisition. Together the two articles provide an overview for practitioners that can form the basis for reasoned decisions in setting objectives, designing curricula, and selecting instructional strategies for limited-English-proficient students.

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The Effect of Age on Acquisition of a Second Language for School

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INTRODUCTION

As the number of non-English- and limited-English-proficient students in our schools increases steadily, educators are looking for more efficient and cost-effective ways to improve these students' English skills so that they can participate fully in the curriculum of their schools. It is natural, then, for teachers, curriculum developers, administrators, and government officials to ask how long it should take for limited-English-proficient students to break through the language limitations that hinder their learning and advancement.

The only simple answer to that question is "It depends." It depends on the learner's cognitive style, socioeconomic background, formal schooling in first language, and many other factors. A substantial amount of research, testing the old axiom that young learners learn best, also tells us that successful language acquisition depends on the learner's age. This article, recognizing the interaction of many variables in second language acquisition, will examine what has been said about the effect of age on the amount of time students need to acquire a second language.

The conclusions presented here, when considered with other research findings and specific student information, can guide planners and practitioners toward the implementation of more effective programs for limited-English-proficient students.

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IS THERE A CRITICAL PERIOD FOR SECOND LANGUAGE ACQUISITION?

Some of the earliest studies of the effect of age on the acquisition of a second language focused on proving or disproving Lenneberg's (1967) critical period hypothesis. Lenneberg theorized that the acquisition of language is an innate process determined by biological factors which limit the critical period for acquisition of a language from roughly two years of age to puberty. Lenneberg believed that after lateralization (a process by which the two sides of the brain develop specialized functions), the brain loses plasticity. Lenneberg claimed that lateralization of the language function is normally completed at puberty, making post-adolescent language acquisition difficult.

Many studies have tested this hypothesis by comparing children to adults in the acquisition of pronunciation. Studies examining subjects' pronunciation after over five years of exposure to the second language consistently find that the large majority of adults retain their accent when the second language is acquired after puberty, whereas children initiating second language acquisition before puberty have little or no foreign accent (e.g., Asher and García, 1969; Oyama, 1976; Seliger, Krashen and Ladefoged, 1975; Tahta, Wood and Loewenthal, 1981). Two studies assessing students' acquisition of pronunciation after three years of exposure to the second

language found that younger students had retained more accent-free pronunciation when compared to adolescents just past puberty (Fathman, 1975; Williams, 1979).

Researchers have debated the age at which lateralization actually occurs. Kinsbourne (1975) proposes completion by birth; Krashen (1973) suggests it may be complete by age 5; Lenneberg (1967) proposes lateralization by puberty. Long (1988) suggests that the brain's loss of placticity is also due to other aspects of cerebral maturation unrelated to lateralization. Regardless of the exact timing of lateralization or other related factors, evidence is very strong that most people who acquire a second language after puberty retain an accent in the second language.

It may be that the effort to test the critical period hypothesis called too much attention to one aspect of language proficiency - pronunciation - and to the child/adult dichotomy. Educators may be more concerned about differences in language acquisition of young children (4-7), older children (8-12), and adolescence (13-16) and they are interested in more aspects of language to be mastered than just pronunciation. The sections which follow examine the effect of age on school children's acquisition of progressively complex language domains: first, basic oral skills, then language skills for school including oral and written skills, and finally language skills in content area development.

DOES AGE AFFECT BASIC ORAL SECOND LANGUAGE DEVELOPMENT?

The critical period studies usually focused on child-adult differences and suggested that younger learners, still operating within the critical period, should be superior learners. However, studies of oral language skill acquisition by children of different ages has led to the conclusion that, initially, older children acquire faster than younger children.

For example, Ervin-Tripp (1974) found that after nine months of instruction in French, 7- to 9- year-olds performed better than 4- to 6- year-olds did in comprehension, imitation, and conversation. Similarly, Fathman (1975) found that in the first year of study, 11- to 15-year-olds were significantly better at acquiring English as a second language than 6- to 10-year-olds in pronunciation, morphology, and syntax.

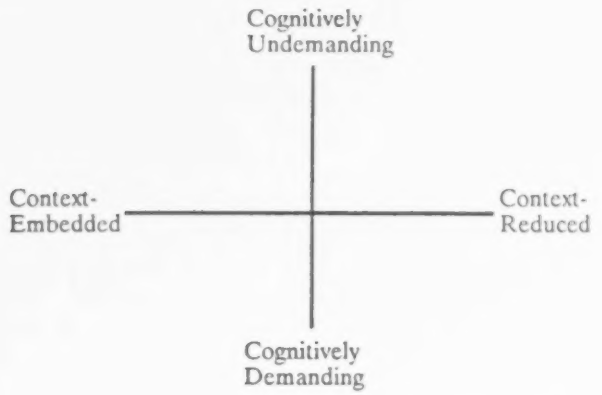
In Fathman's study, however, by year three the younger students outperformed the older ones on the same types of measures. This flip-flop pattern continues in study after study on short-term versus long-term exposure to the language; i.e., an early advantage is seen in the acquisition of oral skills for older acquirers (even those after puberty), but younger acquirers eventually catch up and outperform the older ones after several years' time (Grinder, Otomo and Toyota, 1962; Hamayan, Saegert and Larudee, 1977; Krashen, Scarcella and Long, 1982; Oyama, 1978; Patkowski, 1980; Ramirez and Politzer, 1978; Snow and Hoefnagel-Höhle, 1978; Stern, 1967; and Winitz, 1981).

It is important to note that these studies report a pattern of age differences as seen in studies of basic oral skills in a second language, not the more complex skills required for formal schooling. The next section examines the effect of age on acquiring those skills.

DOES AGE AFFECT THE DEVELOPMENT OF LANGUAGE PROFICIENCY FOR SCHOOL?

If English is being acquired for academic purposes, the level of proficiency expected is much more complex than English for day-to-day survival. Cummins (1979, 1980, 1981a, 1981b) has proposed a model for second language acquisition that distinguishes between these two types of language proficiency: language for general social interaction and language for school. Cummins' distinction between face-to-face conversational proficiency and proficiency which requires the speaker to rely solely on the language itself can help clarify the effect that age has on the language acquisition of limited-English-proficient students.

Cummins uses the term 'context-embedded' to describe face-to-face communication where meaning can be negotiated. This type of communication is enhanced by a wide range of paralinguistic (e.g., gesture, facial expression) and situational cues. On the other hand, context-reduced language relies primarily on linguistic or language-based cues to meaning and is more difficult to produce and comprehend. Cummins' model (see Figure 1) consists of two intersecting continuums: the first from context-embedded language to context-reduced language, and the second from cognitively undemanding language (which requires little conscious attention to language forms or choices) to cognitively demanding language (which requires the active cognitive efforts of the speaker/writer to produce).



(Cummins, 1984 p. 139)

Figure 1. Dimensions of Language Proficiency

Language proficiency required for school tasks can incorporate the whole range of skills in all four quadrants, but it is especially for school that students need to develop context-reduced and cognitively demanding aspects of language in order to function successfully in the classroom. Swain (1981) describes some of these aspects of language for school:

> Language which is used to explain, to classify, to generalize, to abstract, to manipulate ideas, to gain knowledge, and to apply that knowledge (doing so eventually with only language providing the contextualizing cues) constitutes essential aspects of the cognitive demands made on students as they progress in school. One of the goals of the educational system is that students be able to make use of decontextualized language, that is, to be able to use language alone as a tool for learning in reading and listening; and to use language alone as a tool for conceptualizing, drawing abstract generalizations, expressing complex relationships in speaking and writing (p. 5).

For academic purposes, students need to acquire as complete a range of skills in the second language as possible. Language in school becomes increasingly abstract as students move from one grade level to the next. Language becomes the focus of every content area task, with all meaning and all demonstration of knowledge expressed through oral and written forms of language. It would be good to know, then, at what ages and after what length of time students do best in acquiring a second language for school.

Several researchers have conducted studies comparing the performance of students of different ages on language tasks associated with school skills, including reading and writing. The short-term studies once again show an initial advantage for the older students, but in contrast to the previous studies cited on basic oral second language development, the long-term studies show a continuing advantage for the older students (ages 8 to 12). When examining age on arrival, most studies of both short-term and long-term acquisition find that students arriving between the ages of 8 and 12 are faster in early acquisition of second language skills, and over several years' time they maintain this advantage over younger arrivals of 4 to 7 years. Table 1, on the next page, summarizes the findings of several studies that support this conclusion.

Based on this review, we can assert that older students (ages 8 to 12) are faster, more efficient acquirers of school language than younger students (ages 4 to 7). In many of the studies reviewed, young children beginning the study of a second language between the ages of 4 and 7 take much longer to master skills needed for academic purposes than older children do. Why is this so? Several explanations have been proposed, though none yet has conclusive research support. First, we know that children who enter school at age 5 or 6 have *not* completed acquisition of their first language, which continues through at least age 12. From ages 6 to 12, children still are in the process of developing in first language the complex skills of reading and writing, in addition to continuing acquisition of more complex rules of morphology and syntax, elaboration of speech acts, expansion of vocabulary, semantic development, and even some subtleties in phonological development (McLaughlin, 1984, pp. 41-43).

It may be, then, that when young children are asked to learn a second language for use at school before their first language has sufficiently matured to serve as a source of transferable skills, the learning task is very burdensome and requires more time than older children need - children whose first language skills are available for transfer. (The older children in the studies cited had received schooling in their first language.)

It has also been argued (Ausubel, 1964; Burtsall et al., 1974; Cummins, 1981a; Taylor, 1974) that older learners have an advantage in cognitive maturity, which gives them more strategies for acquiring a new language. For example, Scarcella and Higa (1982) showed in an experimental study that older learners take a more active role than younger ones in negotiating understanding and sustaining conversations. As a result, they succeed in obtaining input that is better suited to their learning needs.

TABLE 1

STUDIES OF SECOND LANGUAGE ACQUISITION FOR SCHOOL

RESEARCHER	STUDENTS	SKILLS/TASKS	RESULTS
Grinder, Otomo, and Toyota (1962)	Second- and fourth-graders after one year of study	Vocabulary, listening comprehension	Fourth-graders superior to second-graders
Ervin-Tripp (1974)	English speakers acquiring French in Switzerland, tested in first 9 months	Listening, imitation, taped natural conversation, diary writing, translation	7- to 9-year-olds superior to 4- to 6-year-olds in syntax, morphology and pronunciation
Burstall (1975)	16-year-old English speakers introduced to French at age 8 or 11	Listening, speaking, reading, writing	Students who started French at age 8 only slightly superior to those starting at age 11
Ekstrand (1976)	Immigrants to Sweden LOR* 2; AOA** 6-14	Listening, pronunciation, free oral production, reading comprehension, free writing	Older students better than younger ones on all measures
Snow and Hoefnagel-Höhle (1978)	English speakers acquiring Dutch in Holland. Age groups: 3-5, 6-7, 8-10, 12-15, and adults. Tested at LOR 6 months, 10 months and 14-15 months.	Pronunciation, auditory discrimination, morphology, sentence repetition, sentence translation, sentence judgement, story comprehension, Peabody Picture Vocabulary Test	At LOR 6 months, adults and 12- to 15-year-olds superior on all measures. By LOR 14-15 months, adult progress slower; 8- to 10-year-olds and 12- to 15-year-olds surpassed all others. 3- to 5-year-olds consistently worst performers on all measures
Skuttnabb-Kangas (1979a)	Finnish immigrants to Sweden	Listening, speaking, reading, writing	Students AOA 9-11 significantly better than students AOA 6-8
Lapkin, Swain, Kamin, and Kanna (1980)	Tenth-grade students who began French immersion program at age 5 or age 12	Listening, speaking, reading, writing	Tenth-graders starting at age 12 (1400 hours of instruction) roughly equivalent to group starting at age 5 (4000 hours of instruction)
Ferris and Politzer (1984)	Eighth-grade Mexican immigrants to the U.S.	Writing	Students schooled in Spanish in Mexico for grades K-3 equal to those schooled completely in English in the U.S. for 9 years. Students of AOA 9 years, LOR 5 years had more positive attitudes toward school and higher grade point averages than those of LOR 9 years, AOA 5 years
Cummins, Swain, Nakajima, Hanscombe, Green and Fran (1984)	Japanese students in Canada, Grades 2-3 and 5-6; Vietnamese ages 9-17	English vocabulary, reading, preposition usage, sentence repetition, oral interviews	On second language school skills, older students significantly better; on context-embedded measures (basic skills), younger students better. First language school skills accounted for significant proportion of variance in second language skill

* LOR = Length of residence
** AOA = Age on arrival

Finally, Snow and Hoefnagel-Höhle (1978) concluded after a study of second language acquirers in Holland that their finding of superior initial performance by older learners was perhaps due to the greater academic demands placed on these learners by the schools, creating higher levels of motivation in them than in younger learners to learn the language necessary for success in school.

Whatever the reasons might be, practitioners should be alert to the differences between younger and older school children in the amount of time required for them to develop second language skills adequate for schooling. Older learners (ages 8 to 12) have an advantage, at least initially.

DOES AGE AFFECT CONTENT-AREA ACHIEVEMENT WHEN SCHOOLING IS IN A SECOND LANGUAGE?

Collier (1987) analyzed the length of time required for 1,548 immigrants to the U.S. to become proficient in second language skills for all content areas when schooled only in English. Students who had been mainstreamed after instruction in English as a second language were tested in the fourth, sixth, eighth, and eleventh grades on reading, language arts, social studies, science, and mathematics using standardized tests produced by Science Research Associates (SRA). The study included a range of students beginning with those who began exposure to English, their second language, at age 5 and continuing through those beginning at age 15. Length of residence ranged from two to five years. Over 75 first languages were represented in the sample. Only students who were at grade level when they entered the U.S. and who had no previous exposure to English were included in the study. Social class background of the sample was middle to upper class in the home country with relatively lower income in the U.S., but with strong middle-class aspirations.

Collier found that students who were 8 to 12 years old on arrival were the first to reach norms for native speakers (50th percentile or normal curve equivalent [NCE]) on all content-area tests, doing so within four to five years. Students who were 5 to 7 years old on arrival fell significantly behind the older children in academic achievement, requiring five to eight years to reach the 50th NCE, assuming a continued rate of gain similar to the one at the time of the study. Arrivals at ages 12 to 15 experienced the greatest difficulty reaching age and grade norms, requiring 6 to 8 years at their same rate of gain.

That finding appears at first glance to contradict the generalization that older students whose first language proficiency is better developed acquire a second language for school more rapidly than younger students. However, it may actually be pointing to the increasing complexity of language development at each succeeding grade level and the results of taking time away from content-area instruction while acquiring a second language. Students who are 12 years old on arrival, for example, and who enter seventh grade and begin their schooling completely in English with no previous exposure to English, must take time to acquire beginning levels of basic oral English. As they master sufficient basic English and develop a wide enough range of vocabulary in English to move into deeper development of English for school, they may, in the meantime, lose two to three years of learning in mathematics, science, and social studies at their age and grade level. Secondary students can ill afford a loss of two to three years of complex content-area development if they are to achieve at the performance level of native speakers after a given period of time.

After puberty, then, despite advantageous learning rates, there are two problems with beginning acquisition of a second language: (1) students are more likely to retain an accent, and (2) if academic work is not continued while students are acquiring a second language, there is not enough time left in high school to make up the lost years of academic instruction.

CONCLUSIONS

It is clear that age (or age-related factors) is a major variable in the acquisition of a second language for school. In the early stages of acquisition, older students are faster and more efficient than younger students. Older students have the advantage of cognitive development in their first language to assist them with acquiring school skills in the second language. This early advantage diminishes after the first year for adults, but remains for older children and adolescents for continuing development of their second language skills. Adolescents past puberty are likely to retain an accent in the second language. Otherwise, they are capable of developing complete second language proficiency.

When schooled only in the second language, students in the 8-12 age range on arrival may be the most advantaged acquirers of school skills in the second language, since they have some first language skills to transfer and they still have time to make up the years of academic instruction lost while acquiring basic second language skills and beginning to acquire school skills in the second language. Even though adolescents can acquire second language school skills at a fast pace, they have less time to make up lost years of academic instruction easily.

It is important to note that the effect of age diminishes over time as the acquirer becomes more proficient in the second language. Differences are generally found through the first five years after arrival. It takes language minority students in any type of program a minimum of four years to reach native speakers' level of school language proficiency and may take as many as eight or more years, depending on age on arrival and type of school program, as well as sociocultural factors and the individual characteristics of each second language acquirer.

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